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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/023,321	12/18/2001	Michael S. Milillo	2001-053-ICE	2261

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EXAMINER

ROSS, JOHN M

ART UNIT	PAPER NUMBER
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2188

DATE MAILED: 12/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/023,321

Applicant(s)

MILILLO ET AL.

Examiner

John M Ross

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 28 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 December 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. The Information Disclosure Statements received 28 October 2003 and 18 December 2001 have been considered. Please see attached PTO-1449(s).

### ***Drawings***

2. Figures 1 and 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

3. Claims 1-10 are objected to because of the following informalities:

Claim 1 recites that the cache storage system comprises a plurality of storage devices (Claim 1, lines 3-4), however the specification teaches a data storage system comprising a plurality of storage devices (Fig. 1, element 12; page 7, lines 9-11). This is further evidenced by

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claim 11, which recites a “data storage system comprising a plurality of storage devices” (Claim 11, line 2).

It is suggested that the phrase “A cache storage system for use in” (Claim 1, line 1) be deleted, and the phrase “cache storage system” (Claim 1, line 3) be changed to “data storage system.” The claim(s) will be interpreted in light of this suggestion.

Method claim 6 contains similar inconsistencies as claim 1. Therefore it is suggested that the phrase “cache storage” (Claim 6, line 1) be deleted.

All dependent claims are objected to as having the same deficiencies as the claims they depend from.

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Belsan (US 5,379,391).

As in claim 1, Belsan discloses a data storage system having a plurality of virtual addresses, each associated with a data object (Column 6, lines 30-59), the data storage system comprising:

a plurality of storage devices, each data object being stored at a storage device location, each storage device location having a unique identifier (i.e. logical address) (Fig. 1, element 103-1; column 7, lines 48-66); and

a cache for storing a data object associated with a virtual address (Figs. 1 and 4, element 113; column 6, lines 30-31), wherein a first data object corresponding to a first virtual address is staged into the cache, and a pointer is generated for pointing to the first data object staged in the cache when a storage device location identifier associated with a second virtual address matches a storage device location identifier associated with the first virtual address (Column 3, lines 17-24; column 13, lines 42-59).

Belsan teaches that information relating multiple virtual addresses to a unique data object in the cache is loaded into the cache directory, where it is apparent that such information is obtained from a copy table (Column 10, lines 35-68). As in claims 2 and 3, the copy table of Belsan comprises:

a location identifier table for storing a storage device location identifier (i.e. logical address) (Column 10, line 61); and

a virtual address table for storing a plurality of virtual addresses (Column 10, lines 62 and 66).

As in claim 4, Belsan discloses that the data storage subsystem comprises a disk subsystem (Fig. 1, elements 102-1 and 103-1), the plurality of storage devices comprises a plurality of disk storage devices (Fig. 1, element 103-1) each virtual address comprises a virtual track address (Column 7, lines 55-58; column 10, lines 23-25), and each storage device location identifier comprises a track number (Column 7, lines 58-59), where it is understood that a logical sector address comprises a logical track number (Column 6, line 64 to column 7, line 5).

As in claim 5, Belsan discloses that the pointer comprises an entry in a cache directory, the cache directory entry comprising a location in the cache of a segment storing data associated with a data object shared by the first and second virtual address (Column 3, lines 17-24), where it is understood that the hash table and collision list of the cache memory comprise a directory utilized to lookup entries in the cache.

Claims 6-10 are rejected using the same rationale as for the rejection of claims 1-5, respectively as above.

Claim 11 is rejected using the same rationale as for the rejection of claims 1, 2 and 3 above, noting that the copy table of Belsan links the first virtual address with the location

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identifier, and the second virtual address is linked to the first virtual address (Column 10, lines 61-62 and 64).

Claim 12 is rejected using the same rationale as for the rejection of claim 2 above.

Claim 13 is rejected using the same rationale as for the rejection of claim 3 above.

Claim 14 is rejected using the same rationale as for the rejection of claims 2 and 3 above.

Claim 15 is rejected using the same rationale as for the rejection of claim 4 above.

Claim 16 is rejected using the same rationale as for the rejection of claim 5 above.

Claims 17-22 are rejected using the same rationale as for the rejection of claims 11-16, respectively as above.

### ***Conclusion***

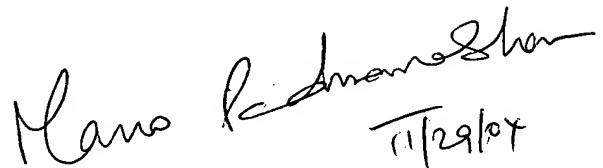
Any inquiry concerning this communication or earlier communications from the examiner should be directed to John M Ross whose telephone number is (571) 272-4212. The examiner can normally be reached on M-F 8:00 AM - 4:30 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabhan can be reached on (571) 272-4210. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
JMR

  
11/29/07

**MANO PADMANABHAN**  
**SUPERVISORY PATENT EXAMINER**